

Claims

1. A nozzle for plasma torches, consisting of a metal or a metal alloy, characterized in that wear-resistant microparticles of a hard material are
5 embedded in the metal or the metal alloy, at least in certain regions.
2. The nozzle as claimed in claim 1, characterized in that the maximum grain size of the embedded microparticles is less than or equal to 30 μm .
- 10 3. The nozzle as claimed in claim 1 or 2, characterized in that the maximum grain size of the embedded microparticles is less than or equal to 15 μm .
4. The nozzle as claimed in one of the preceding claims, characterized in that that the hard material is
15 a carbide.
5. The nozzle as claimed in one of the preceding claims, characterized in that the hard material is silicon carbide.
6. The nozzle as claimed in one of the preceding
20 claims, characterized in that the hard ceramic material for the microparticles is an oxide, a carbide, a nitride or a boride or, alternatively, microparticles of at least two of these chemical compounds are embedded.
- 25 7. The nozzle as claimed in one of the preceding claims, characterized in that microparticles in a grain size spectrum around an average grain size d_{50} , which is located in the range between 1 and 5 μm , are embedded.
8. The nozzle as claimed in one of the preceding
30 claims, characterized in that the embedded microparticles fill a volume proportion in the range between 0.5 and 15% in the nozzle material.
9. The nozzle as claimed in one of the preceding claims, characterized in that the microparticles are
35 embedded in the region pointing toward the inside of the nozzle.
10. The nozzle as claimed in one of the preceding claims, characterized in that microparticles are

embedded in the region of the nozzle opening.

11. The nozzle as claimed in one of the preceding claims, characterized in that microparticles are embedded in a locally differentiated manner.

5 12. The nozzle as claimed in one of the preceding claims, characterized in that the nozzle is essentially formed from copper or a copper alloy.

13. A method for manufacturing a nozzle for plasma cutting torches as claimed in one of claims 1 to 12,
10 characterized in that the nozzle is manufactured by extrusion from a metal or metal alloy powder mixture containing microparticles.

14. The method as claimed in claim 13,
15 characterized in that the final contour of the nozzle is formed by a chip-removal machining process and/or a metal-forming process.